

State/Industry Network

Air Quality Report

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Prepared By:

Air Quality Monitoring Branch  
Division of Environmental Engineering  
North Dakota Department of Health

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## **SECTION ONE**

### **DISCUSSION OF MONITORING RESULTS**

### Sulfur Dioxide (SO<sub>2</sub>)

There were no exceedances of either the state or federal standards during the quarter. The maximum 1-hour concentration was 612 ppb at DGC #12 on September 8; the maximum 3-hour concentration was 288 ppb at DGC #12 on September 8; and, the maximum 24-hour concentration was 55 ppb at DGC #12 on September 8. All sites achieved at least an 80% data recovery for the period operated.

Due to Legislative action, which became effective August 1, the state sulfur dioxide standards were set aside for coal conversion facilities.

### Sulfur Dioxide (SO<sub>2</sub>) 5-Minute Average

The maximum 5-minute concentration was 198 ppb at Mandan - Refinery on September 29.

### Hydrogen Sulfide (H<sub>2</sub>S)

There were 9 exceedances of the 1-hour H<sub>2</sub>S standard during the quarter at Whiskey Joe - SPM. The maximum 1-hour concentration was 310 ppb at Whiskey Joe - SPM on September 7; the maximum 24-hour concentration was 58 ppb at Bear Paw - MGP #4 on September 18; the maximum 3-month concentration was 10 ppb at Whiskey Joe - SPM in July. All sites achieved at least an 80% data recovery for the period operated.

The 9 1-hour exceedances at Whiskey Joe - SPM were caused by the Federal 1-7 oil well owned by Slawson Exploration, Inc., southeast of the monitoring site. A Notice of Violation was issued to Slawson Exploration, Inc., on January 16, 1997. The well is now operating under a consent agreement.

### Ozone (O<sub>3</sub>)

There was no exceedance of the ozone standard during the quarter. The maximum observed 1-hour concentration was 70 ppb at Beulah on August 28. The maximum 8-hour concentration was 62 ppb at Beulah on August 28. All sites achieved at least an 80% data recovery for the period operated.

The Beulah and TRNP - NU analyzers were shut down for the winter effective September 30.

### Nitrogen Dioxide (NO<sub>2</sub>)

The maximum 1-hour concentration observed was 108 ppb at DGC #17 on August 22. All sites achieved at least an 80% data recovery for the period operated.

### Inhalable PM<sub>2.5</sub> Particulates

The maximum 24-hour average concentration was 16.4  $\mu\text{g}/\text{m}^3$  at Bismarck Residential on July 9. Both sites achieved at least an 80% data recovery for the period operated.

### Inhalable PM<sub>10</sub> Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 67.0  $\mu\text{g}/\text{m}^3$  at Fargo Residential on August 8. All sites achieved at least an 80% data recovery for the period operated.

### Inhalable PM<sub>2.5</sub> Sulfates (SO<sub>4</sub>)

The maximum 24-hour PM<sub>2.5</sub> sulfate concentration was 1.9  $\mu\text{g}/\text{m}^3$  at Beulah on July 9. Both sites achieved at least 80% data recovery.

### Inhalable PM<sub>10</sub> Sulfates

The maximum 24-hour PM<sub>10</sub> sulfate concentration was 3.0  $\mu\text{g}/\text{m}^3$  at Grand Forks - North on August 26. All sites achieved at least 80% data recovery.

### PM<sub>2.5</sub> Sulfate /PM<sub>2.5</sub> Total Mass Analysis

The PM<sub>2.5</sub> sulfate/PM<sub>2.5</sub> total mass tables present statistics for PM<sub>2.5</sub> sulfate and PM<sub>2.5</sub> total mass when both concentrations are greater than the respective minimum detectable concentration: 0.5 µg/m<sup>3</sup> for PM<sub>2.5</sub> sulfate analysis; 4 µg/m<sup>3</sup> for PM<sub>2.5</sub> total mass. Statistics for the ratio are produced by evaluating the ratio of the PM<sub>2.5</sub> sulfate concentration to the PM<sub>2.5</sub> total mass concentration for each data pair. In the individual summaries, one-half of the minimum detectable concentration is substituted for those concentrations less than the minimum detectable value. However, when the PM<sub>2.5</sub> total mass concentration is less than 4 µg/m<sup>3</sup>, the PM<sub>2.5</sub> sulfate concentration can be higher than the PM<sub>2.5</sub> total mass concentration. This is because of the variability in the sulfate analysis procedure at low concentrations. Therefore, when calculating the ratio of PM<sub>2.5</sub> sulfate concentration to PM<sub>2.5</sub> total mass concentration, only data pairs where both the PM<sub>2.5</sub> sulfate and PM<sub>2.5</sub> total mass concentrations are greater than the minimum detectable concentrations are used. When the ratio is multiplied by 100, it becomes the percentage of total mass which is sulfate. The maximum PM<sub>2.5</sub> Sulfate/PM<sub>2.5</sub> total mass ratio was 0.308 (30.8%) at Bismarck Residential on September 19. The maximum average ratio was 0.149 (14.9%) at Beulah.

### PM<sub>10</sub> Sulfate/PM<sub>10</sub> Total Mass Analysis

The PM<sub>10</sub> sulfate/PM<sub>10</sub> total mass tables present statistics for PM<sub>10</sub> sulfate and PM<sub>10</sub> total mass when both concentrations are greater than the respective minimum detectable concentration: 0.5 µg/m<sup>3</sup> for PM<sub>10</sub> sulfate analysis; 4 µg/m<sup>3</sup> for PM<sub>10</sub> total mass. Statistics for the ratio are produced by evaluating the ratio of the PM<sub>10</sub> sulfate concentration to the PM<sub>10</sub> total mass concentration for each data pair. In the individual summaries, one-half of the minimum detectable concentration is substituted for those concentrations less than the minimum detectable value. However, when the PM<sub>10</sub> total mass concentration is less than 4 µg/m<sup>3</sup>, the PM<sub>10</sub> sulfate concentration can be higher than the PM<sub>10</sub> total mass concentration. This is because of the variability in the sulfate analysis procedure at low concentrations. Therefore, when calculating the ratio of PM<sub>10</sub> sulfate concentration to PM<sub>10</sub> total mass concentration, only data pairs where both the PM<sub>10</sub> sulfate and PM<sub>10</sub> total mass concentrations are greater than the minimum detectable concentrations are used. When the ratio is multiplied by 100, it becomes the percentage of total mass which is sulfate. The maximum PM<sub>10</sub> Sulfate/PM<sub>10</sub> total mass ratio was 0.167 (16.7%) at Dickinson Residential on July 27. The maximum average ratio was 0.080 (8.0%) at Dickinson.

## SECTION TWO

### AMBIENT AIR QUALITY DATA

#### SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M	A	X	I	M	A	24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	3MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD						
AMERADA HESS - TIOGA #1	1997	JUL-SEP	2181	54 07/31/08	31 08/08/07	23 07/31/08	13 07/29/20	4 07/31	4 08/07	1.4						13.2	
AMERADA HESS - TIOGA #3	1997	JUL-SEP	2189	89 07/28/12	79 08/03/09	54 07/28/14	42 09/19/02	16 09/19	14 08/09	2.5						17.0	
BEAR PAW - MGP #3	1997	JUL-SEP	2037	170 09/27/02	128 09/27/01	101 09/27/02	82 09/13/11	15 09/27	14 09/08	1.7						7.8	
BEULAH	1997	JUL-SEP	2198	39 07/19/15	27 07/16/12	27 07/19/17	24 07/16/14	7 07/19	6 07/16	1.6						12.8	
DGC #12	1997	JUL-SEP	2172	612 09/08/22	233 09/08/23	288 09/08/23	140 09/08/20	55 09/08	8 08/20	2.5	1					18.7	
DGC #14	1997	JUL-SEP	2165	96 09/09/02	89 08/21/08	35 09/09/02	33 08/21/08	12 08/21	8 09/17	2.6						40.4	
DGC #16	1997	JUL-SEP	2099	122 07/23/13	79 09/03/11	63 07/23/14	57 07/26/14	28 09/03	20 09/02	4.2						58.3	
DGC #17	1997	JUL-SEP	2089	61 09/30/11	57 07/26/13	41 09/30/11	33 07/26/14	13 07/26	11 09/30	4.6						74.3	
DUNN CENTER	1997	JUL-SEP	1995	11 08/26/16	8 08/26/17	7 08/26/17	5 09/15/02	3 08/26	2 09/15	1.1						5.4	
FARGO RESIDENTIAL	1997	JUL-SEP	2198	5 09/15/18	4 07/10/20	3 07/23/23	3 08/22/23	1 07/01	1 09/30	1.0						1.6	
HANNOVER	1997	JUL-SEP	2193	44 08/12/09	43 07/26/15	40 08/23/11	31 09/22/17	9 08/23	7 09/22	2.2						19.3	
LITTLE KNIFE #5	1997	JUL-SEP	2196	10 09/07/23	9 09/08/00	5 08/22/11	5 09/08/02	2 08/22	2 09/30	1.1						5.6	
MANDAN REFINERY - SPM	1997	JUL-SEP	2196	112 07/02/08	108 07/02/09	85 09/19/05	78 07/02/08	41 09/19	37 07/02	3.3						34.0	
SHARON	1997	JUL-SEP	1979	5 08/04/08	4 07/04/11	4 07/21/11	4 08/05/05	3 07/19	3 08/04	1.4						29.6	

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
TRNP - NU	1997	JUL-SEP	2194	10 08/26/22	9 08/26/23	7 08/26/23	7 08/27/02	2 07/17	2 09/15	1.1			6.0
WHISKEY JOE - SPM	1997	JUL-SEP	2015	11 07/20/12	9 07/14/19	7 07/20/14	6 08/03/05	4 09/20	4 09/23	1.5			29.5
WHITE SHIELD	1997	JUL-SEP	2187	70 09/02/10	31 09/03/08	34 09/02/11	29 09/03/08	15 09/03	8 09/02	2.3			47.3

The maximum 1-hour concentration is 612 ppb at DGC #12 on 09/08/22  
The maximum 3-hour concentration is 288 ppb at DGC #12 on 09/08/23  
the maximum 24-hour concentration is 55 ppb at DGC #12 on 09/08

\* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	PERIOD	OBS	1ST	5 - M I N U T E	MAXIMA	# HOURS >600	% >MDV
				DATE MM/DD/HH	2ND DATE MM/DD/HH	3RD DATE MM/DD/HH		
BEULAH	1997	JUL-SEP	2198	76    8/20/14	65    7/15/10	59    7/16/12	0	20.2
DUNN CENTER	1997	JUL-SEP	1837	17    9/ 6/ 7	16    8/26/16	14    9/19/18	0	13.6
FARGO RESIDENTIAL	1997	JUL-SEP	2198	5    9/15/18	4    7/10/20	4    7/22/22	0	1.6
HANNOVER	1997	JUL-SEP	2193	86    8/23/ 9	83    8/12/ 9	81    7/20/13	0	28.0
MANDAN REFINERY - SPM	1997	JUL-SEP	2196	198    9/29/12	195    9/27/ 7	180    7/ 2/ 8	0	47.6
SHARON	1997	JUL-SEP	1979	5    8/ 4/ 8	4    7/ 4/11	4    7/15/ 9	0	29.6
TRNP - NU	1997	JUL-SEP	2194	16    7/ 2/ 7	15    8/26/22	14    7/28/17	0	10.4
WHISKEY JOE - SPM	1997	JUL-SEP	2151	37    7/14/19	26    7/14/20	22    8/30/ 0	0	35.9

The maximum 5-minute concentration is 198 ppb at MANDAN REFINERY - SPM on 9/29/12

\* No standard is currently in effect

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Hydrogen Sulfide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		24 - HOUR		3 - MONTH		ARITH MEAN	1HR #>200	24HR #>100	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD	1ST MM	2ND MM				
AMERADA HESS - TIOGA #2	1997	JUL-SEP	2170	59 09/17/19	46 09/07/20	8 08/01	8 09/06	2 07	2 09	2.3			29.4
BEAR PAW - MGP #4	1997	JUL-SEP	2059	161 09/18/10	156 09/18/09	58 09/18	31 09/19	4 09	2 07	3.5			26.3
LITTLE KNIFE #5	1997	JUL-SEP	2193	118 07/21/20	117 07/20/22	21 07/20	20 07/21	4 07	3 09	3.0			36.1
TRNP - NU	1997	JUL-SEP	2194	6 09/06/06	5 08/22/06	2 09/06	1 09/30	2 07	1 09	1.0			2.4
WHISKEY JOE - SPM	1997	JUL-SEP	2151	310 09/07/19	269 07/03/01	46 09/08	40 09/24	10 07	9 09	9.0	9		27.5

The maximum 1-hour concentration is 310 ppb at WHISKEY JOE - SPM on 09/07/19  
 the maximum 24-hour concentration is 58 ppb at BEAR PAW - MGP #4 on 09/18  
 The maximum 3-month concentration is 10 ppb at WHISKEY JOE - SPM on 07

\* The State air quality standards are:

- 1) 10 ppm maximum instantaneous (ceiling) concentration not to be exceeded.
- 2) 200 ppb maximum 1-hour average concentration not to be exceeded more than once per month.
- 3) 100 ppb maximum 24-hour average concentration not to be exceeded more than once per year.
- 4) 20 ppb maximum arithmetic mean concentration averaged over three consecutive months.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Ozone (PPB)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A			8 - HOUR			1HR #>120	8HR #>80
				1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH		
BEULAH	1997	JUL-SEP	2197	70 08/28/16	66 08/28/15	66 08/28/13	62 08/28/18	53 08/28/17	53 08/28/19		
FARGO RESIDENTIAL	1997	JUL-SEP	2198	59 08/02/15	57 08/02/16	56 08/02/14	53 08/02/18	50 08/02/19	50 08/02/17		
HANNOVER	1997	JUL-SEP	2194	67 08/28/14	66 08/28/17	65 08/28/13	62 08/28/19	52 08/28/18	52 08/28/17		
SHARON	1997	JUL-SEP	2199	54 07/11/04	53 07/02/01	53 07/02/00	50 07/02/01	49 07/02/00	49 08/24/18		
TRNP - NU	1997	JUL-SEP	2193	64 07/09/17	63 07/09/16	63 07/09/15	61 07/09/21	60 07/09/20	60 08/27/18		

The maximum 1-hour concentration is 70 ppb at BEULAH on 08/28/16  
The maximum 8-hour concentration is 62 ppb at BEULAH on 08/28/18

\* The air quality standards for ozone are:  
STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - 120 ppb with no more than one expected exceedance per year.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A			ARITH MEAN	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH			
BEULAH	1997	JUL-SEP	2193	30 09/26/17	29 09/26/18		3.3	64.5
DGC #12	1997	JUL-SEP	2187	34 09/22/10	28 08/31/10		4.0	95.5
DGC #17	1997	JUL-SEP	2018	108 08/22/04	101 09/15/20		4.6	90.8
FARGO RESIDENTIAL	1997	JUL-SEP	1868	39 08/01/20	37 09/10/19		5.6	82.3
HANNOVER	1997	JUL-SEP	2188	17 09/22/16	16 07/26/16		1.8	31.0
SHARON	1997	JUL-SEP	2197	13 08/26/20	9 09/30/17		1.2	14.1

The maximum 1-hour concentration is 108 ppb at DGC #17 on 08/22/04

\* The air quality standards are:

STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>2.5</sub> Particulates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#> 50	AM>20	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
BEULAH	1997	JUL-SEP	15	3.7	12.3 08/02	11.9 09/25	11.4 08/08	8.4			93.3
BISMARCK RESIDENTIAL	1997	JUL-SEP	13	5.2	16.4 07/09	14.7 08/08	13.0 07/15	11.3			100.0

The maximum 24-hour concentration is 16.4 µg/m<sup>3</sup> at BISMARCK RESIDENTIAL on 07/09

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Particulates ( $\mu\text{g}/\text{m}^3$ )

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#>150	AM>50	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
BEULAH	1997	JUL-SEP	14	8.6	28.2 08/02	27.5 08/20	21.2 08/26	17.2			100.0
BISMARCK RESIDENTIAL	1997	JUL-SEP	13	6.6	26.0 08/08	22.9 07/09	19.8 08/20	16.2			100.0
DICKINSON RESIDENTIAL	1997	JUL-SEP	14	8.9	23.7 09/25	19.5 08/08	17.6 08/02	15.2			100.0
DRAGSWOLF	1997	JUL-SEP	15	4.0	17.0 07/09	17.0 09/25	16.0 08/02	12.5			100.0
FARGO RESIDENTIAL	1997	JUL-SEP	13	4.0	67.0 08/08	47.1 08/26	40.3 07/15	26.1			100.0
GRAND FORKS - NORTH	1997	JUL-SEP	15	5.8	64.4 08/08	50.2 08/14	42.1 08/02	28.2			100.0
SHARON	1997	JUL-SEP	15	9.6	28.9 08/02	28.7 09/19	28.7 09/25	17.4			100.0
WHITE SHIELD	1997	JUL-SEP	15	5.0	20.0 09/25	16.0 09/19	15.0 07/09	12.3			100.0
WILLISTON RESIDENTIAL	1997	JUL-SEP	12	4.8	35.9 09/26	29.0 08/02	26.6 08/21	17.3			100.0

The maximum 24-hour concentration is 67.0  $\mu\text{g}/\text{m}^3$  at FARGO RESIDENTIAL on 08/08

\* The STATE and FEDERAL air quality standards are:

- 1) 150  $\mu\text{g}/\text{m}^3$  maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50  $\mu\text{g}/\text{m}^3$  expected annual arithmetic mean.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>2.5</sub> Sulfates ( $\mu\text{g}/\text{m}^3$ )

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#>15.	AM>5.	% >MDV
					24 - HOUR						
			1ST MM/DD	2ND MM/DD	3RD MM/DD						
BEULAH	1997	JUL-SEP	15	0.6	1.9 07/09	1.8 08/20	1.5 08/26	1.3			100.0
BISMARCK RESIDENTIAL	1997	JUL-SEP	13	0.3	1.7 07/09	1.6 08/20	1.6 09/19	1.2			92.3

The maximum 24-hour concentration is 1.9  $\mu\text{g}/\text{m}^3$  at BEULAH on 07/09

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Sulfates ( $\mu\text{g}/\text{m}^3$ )

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#>15.	AM>5.	% >MDV
					24 - HOUR						
			1ST MM/DD	2ND MM/DD	3RD MM/DD						
BEULAH	1997	JUL-SEP	14	0.6	1.9 07/09	1.9 08/20	1.6 09/07	1.3			100.0
BISMARCK RESIDENTIAL	1997	JUL-SEP	13	0.3	1.9 07/09	1.5 08/20	1.5 09/13	1.2			92.3
DICKINSON RESIDENTIAL	1997	JUL-SEP	14	0.7	1.5 07/27	1.5 08/31	1.4 08/20	1.1			100.0
FARGO RESIDENTIAL	1997	JUL-SEP	14	0.1	2.5 08/08	2.4 09/13	1.8 07/09	1.3			92.8
GRAND FORKS - NORTH	1997	JUL-SEP	15	0.1	3.0 08/26	2.8 08/08	2.1 07/09	1.5			93.3
SHARON	1997	JUL-SEP	15	0.4	1.9 09/13	1.7 07/09	1.6 09/19	1.1			93.3
WILLISTON RESIDENTIAL	1997	JUL-SEP	12	0.4	1.7 08/21	1.6 07/24	1.6 09/13	1.0			91.6

The maximum 24-hour concentration is 3.0  $\mu\text{g}/\text{m}^3$  at GRAND FORKS - NORTH on 08/26

\* No standard is currently in effect

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : PM<sub>2.5</sub> Sulfate/PM<sub>2.5</sub> Total Mass Ratio (Percentage)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M	A	X	I	M	A	ARITH MEAN
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
BEULAH	1997	JUL-SEP	14	9.6	19.4 07/09	19.4 07/27		17.9 09/07			14.9
BISMARCK RESIDENTIAL	1997	JUL-SEP	12	6.2	30.8 09/19	13.6 08/20	11.5 09/13				11.7

The maximum 24-hour ratio is 30.8 percent at BISMARCK RESIDENTIAL on 09/19

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : PM<sub>10</sub> Sulfate/PM<sub>10</sub> Total Mass Ratio (Percentage)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M	A	X	I	M	A	ARITH MEAN
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
BEULAH	1997	JUL-SEP	14	4.6	14.0 09/19	11.1 07/09	10.0 07/27				7.9
BISMARCK RESIDENTIAL	1997	JUL-SEP	12	3.7	12.1 09/19	9.3 09/07	9.0 07/27				7.8
DICKINSON RESIDENTIAL	1997	JUL-SEP	14	3.4	16.7 07/27	12.4 09/19	10.9 08/20				8.0
FARGO RESIDENTIAL	1997	JUL-SEP	12	2.3	13.6 09/13	10.6 07/09	10.4 09/07				6.6
GRAND FORKS - NORTH	1997	JUL-SEP	14	2.8	11.1 08/20	9.9 09/25	9.2 09/19				6.1
SHARON	1997	JUL-SEP	14	2.8	15.5 07/09	13.1 09/13	10.4 07/03				7.9
WILLISTON RESIDENTIAL	1997	JUL-SEP	11	2.8	16.5 07/27	11.7 09/13	8.5 08/09				7.3

The maximum 24-hour ratio is 16.7 percent at DICKINSON RESIDENTIAL on 07/27

\* No standard is currently in effect.

## **SECTION THREE**

### **EXCEEDANCE LISTINGS**

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )

The \* Identifies the Exceedances

----- SITE=WHISKEY JOE - SPM -----																	
DATE	HOUR	1-HOUR		3-HOUR		24-HOUR		5-MIN		24-HOUR		NO2	O3	WS	WD	PM10	PM25
		SO2	BLOCK	SO2	BLOCK	SO2	BLOCK	SO2 MAX	H2S	H2S	BLOCK						
July 3, 1997	100	2						7	269*					1.8	200		
August 29, 1997	2000	4	2					8	212*					1.7	144		
September 7, 1997	1900	3						5	310*					2.5	132		
September 8, 1997	1900	5						11	212*					1.1	201		
September 8, 1997	2000	4	4					5	259*					2.3	181		
September 8, 1997	2100	4						8	202*					1.9	172		
September 9, 1997	500	3	3					4	218*					0.6	2		
September 9, 1997	1800	4						6	264*					2.1	131		
September 24, 1997	2000	4	4					5	237*					3.6	157		

## By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )

The \* Identifies the Exceedances

DATE=July 3, 1997														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	100	2			7	269*				1.8	200			
DATE=August 29, 1997														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	2000	4	2		8	212*				1.7	144			
DATE=September 7, 1997														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	1900	3			5	310*				2.5	132			
DATE=September 8, 1997														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	1900	5			11	212*				1.1	201			
WHISKEY JOE - SPM	2000	4	4		5	259*				2.3	181			
WHISKEY JOE - SPM	2100	4			8	202*				1.9	172			
DATE=September 9, 1997														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	500	3	3		4	218*				0.6	2			
DATE=September 9, 1997														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	1800	4			6	264*				2.1	131			
DATE=September 24, 1997														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	2000	4	4		5	237*				3.6	157			

